Ecosystem Modeling: Looking for Common Themes
Group 3 Ideas

Approach

- Not convinced we know enough about eco similitude to lay out unifying principles that point the way
- Not convinced that a single framework will address the widely varying issues
- Took the approach of laying out “what we presently can’t do or are not doing that we should possibly be doing”

Things we presently can not do or are not doing and possibly should be doing

- Landscape evolution modeling with linkages to desktop and high fidelity models for hydro, WQ, sediment, habitat classification/value, etc. (ex. Everglades landscape model, CELS, CLEAR, EDYS)
- Parameterization of population trajectory models
- Coupling of IBMs/ELAMs with biogeochemistry, bioenergetics, life stages, etc.
- Conceptual and scientific linkages among different types of models, e.g., watershed and receiving water, biomass and population models, etc.

Things we presently can not do or are not doing and possibly should be doing

- Process-based, mechanistic, predictions for higher trophic levels and TES
- Standardized geospatial framework to support eco modeling
- Quantification of uncertainty
- Application of fuzzy logic to quantify uncertainty
- Quantification of environmental benefits
- Applying methods to integrate multiple endpoint metrics into weight of evidence “best” decisions, e.g., how to role up multi-scale metrics and multiple indicators into measures of eco function

Recommendations

- Get candidate landscape evolution models and take them around the block
- Identify and close gaps in conceptual and scientific linkages in existing key modeling areas
- Initiate next level of IBMs/ELAMS that contain life stages, linkages to env. conditions (temp, DO, etc.), and population change
- Investigate how to extend the capability to use process-based, mechanistic modeling for to predict responses of higher trophic levels and TES
- Explore integration of fuzzy logic for uncertainty analysis in eco modeling
- Standardize a geospatial framework to support eco modeling

Recommendations

- Explore use of MCDA to integrate multiple endpoint metrics into weight of evidence “best” decisions, e.g., how to role up multi-scale metrics and multiple indicators into measures of eco function